# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OPERABLE UNIT 2 – LANDFILL CAPS
# CINNAMINSON TOWNSHIP PUBLIC MEETING
# MAY 12, 2014

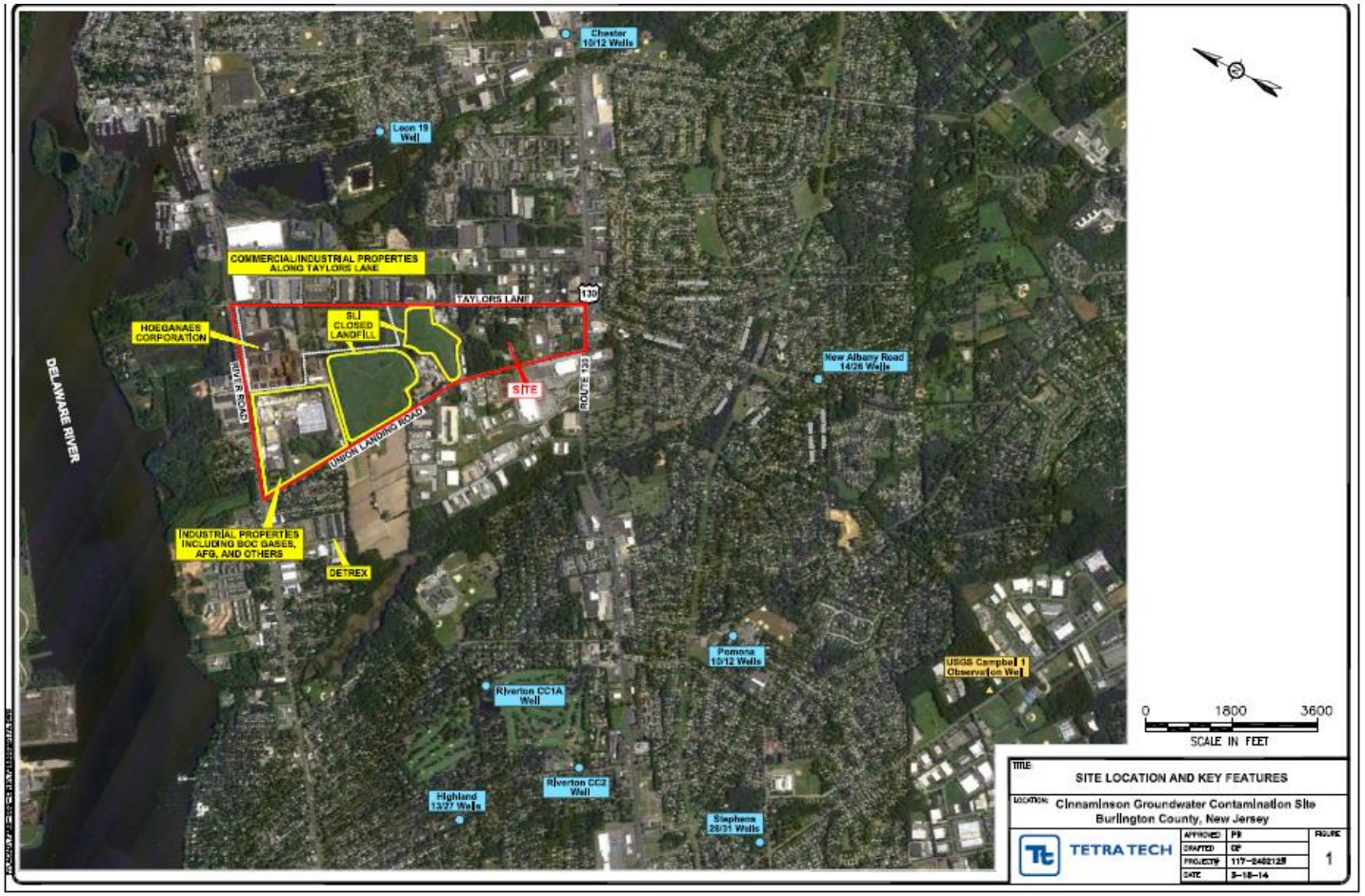
## PRESENTED BY:
## EPA REGION 2

# CINNAMINSON GROUNDWATER CONTAMINATION SITE PURPOSE

- Brief update on status of overall environmental clean-up work

- Describe EPA's proposed remedy for a discrete phase of work (aka operable unit) involving landfill capping

# CINNAMINSON GROUNDWATER CONTAMINATION SITE



## CINNAMINSON GROUNDWATER CONTAMINATION SITE

- 400-Acre site bounded by Union Landing Rd./Route 130/River Rd./Taylors Lane
- Site Contains: Industrial/Commercial/2 Landfills/ Residential Properties
- Delaware River to the West/Public Supply Wells to the East
- Landfill Operation -- 1962 to closure in 1980

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## PHASES OF WORK OR OPERABLE UNITS (OUs)

- OU1 – Groundwater Contamination
- OU2 – Capping Landfills
- OU3 – Former BOC Gases Facility
- OU4 – Area-wide groundwater contamination

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OPERABLE UNIT 1

- Addresses Groundwater (GW) contamination from two landfills
- Major source of area-wide GW contamination
- Environmental investigations mid-80s & design/construction of groundwater remedy in 90s
- 2000-2013: Operation of groundwater extraction/ treatment/reinjection system significantly reduced GW concentrations attributable to two landfills
- Shut-down pilot test in progress

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OPERABLE UNIT 3

- Addresses soil/groundwater contamination-former BOC Gases facility
- Environmental investigations/remediation previously performed under NJDEP oversight thru Industrial Site Recovery Act program
- Remediation included soil excavation/removal & installation of a soil vapor extraction system
- Linde (successor to BOC Gases) to perform remedial investigation/feasibility study (RI/FS) under EPA oversight
- Soil/groundwater investigations will complete characterization & determine site-wide remedy

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OPERABLE UNIT 3

- EPA performing investigation to assess vapor intrusion (approximately 60 locations investigated to date)
- EPA installed vapor mitigation systems in two residences
- EPA assessing data to determine follow-up sampling
- Additional vapor intrusion sampling (sub-slab soil gas and indoor air) expected fall/winter 2014.

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OPERABLE UNIT 4

- Addresses GW contamination within 400-acre area-wide site not delineated as part of OU1 and OU3
- Soil /groundwater/surface water/sediment sampling locations, many in Township rights-of-way
- Permission recently sought for access to Township property via access agreement to perform environmental sampling
- Fieldwork expected to begin spring/summer 2014

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OPERABLE UNIT 2

- Addresses adequacy of previous Sanitary Landfill Inc. LFs closure including capping and gas mitigation system enhancements
- EPA formalizing proposed remedy decision of no action
- Public comment period April 30th thru May 29th
- EPA public meeting May 12th to present/discuss proposed plan

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OPERABLE UNIT 2

### Contaminants of Concern

- Volatile Organic Compounds (VOCs) - benzene/trichloroethylene (TCE)/perchloroethylene (PCE)/vinyl chloride/ metals - arsenic

### Potential Human Health/Ecological Risk

- Current/future residential exposure via ingestion of groundwater assuming a private drinking water well installed in area of groundwater contamination
- Drinking water via a public water supply which is treated and routinely tested per Clean Water Act and state regulations
- No threatened/endangered species or critical habitats – environmental risk determined not to be significant

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – SITE HISTORY/CLEAN-UP ACTIVITIES

- Originally sand & gravel operation/landfill 1970-80
- NJDEP closed landfill – 1980
- NJDEP-approved closure plan: 18” clay cap/landfill gas management system/groundwater monitoring
- Final NJDEP cap construction approval - 1989
- Monitoring at/around landfills detected groundwater contamination in conjunction with landfill closure
- Site listed on EPA’s National Priorities List (NPL) in 1984

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – SITE HISTORY/CLEAN-UP ACTIVITIES

- OU1 originally identified/evaluated three capping alternatives
  - No further action
  - Monitoring & administrative controls
  - RCRA capping

- OU1 Remedy Decision (Record of Decision)- Deferred evaluation of performance of NJDEP-approved cap pending construction/operation of groundwater remedy

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – SITE HISTORY/CLEAN-UP ACTIVITIES

- Evaluate performance of caps to effectively act as barrier to infiltration of rainwater into landfills
  - Cap Construction
  - Cap Maintenance
  - Monitoring of Groundwater

- Achieve remedial action objective of reducing degradation of groundwater resulting from leaching of contaminants thru landfills

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – EFFECTIVENESS OF CAPS

## Cap Construction - NJDEP Capping Requirements

- 6” topsoil
- 18” low permeability soil with hydraulic conductivity of $1 \times 10^{-5}$ centimeters/second (cm/sec)

## Cap Construction – Actual Cap Closure System

- 6” topsoil
- 6” sand drainage layer
- Average 20.4” (Northwest LF) & 22.8” (Southeast LF) low permeability soil with hydraulic conductivity of $4.11 \times 10^{-8}$ cm/sec
- Exceeds NJDEP capping requirements

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – EFFECTIVENESS OF CAPS

## Cap Construction – Drainage Improvements

- Culverts/rip-rap lined swales/downchutes/swales lined with erosion control matting/rock check dams
- Measures facilitated drainage of stormwater from landfill surface
- Increase landfill caps resistance to rainfall infiltration

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – EFFECTIVENESS OF CAPS

Cap Construction – Landfill Gas (LFG) Management System

- Enhancements to LFG management system in mid-90s
  - Installation of 34 gas extraction wells
  - Installation of 10 gas monitoring probes
  - New piping/pumps/drains & associated mechanical/electrical modifications
  - Installation of new gas flare

- 4 LFG probes regularly monitored – no measured LFG exceeds allowable limits

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – EFFECTIVENESS OF CAPS

## Cap Maintenance

- Stormwater discharge regulated by New Jersey discharge elimination system permit (NJPDES) and stormwater pollution prevention plan (SPPP)

- Latest NJDEP compliance inspection report indicates facility is in compliance with NJPDES permit

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – EFFECTIVE OF CAPS

## Cap Maintenance

- SPPP Requires monthly/quarterly inspections for:
  - Evidence of vegetative distress/growth requiring cutting
  - Evidence of erosion or blockage of stormwater channels/basins
  - Operation of LFG management system

- Monthly/quarterly inspection reports confirm facility experienced regular inspections/addressed any maintenance items as required

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – PERFORMANCE OF REMEDY

Groundwater Monitoring Associated with Landfill Caps

- Prior to remedy, maximum VOC concentrations of contaminants of concern ranged from 10s to 1000s of parts per billion (ppb)

- Since 2000, operation of groundwater extraction/treatment/ reinjection system

- VOC concentrations of contaminants of concern have been significantly reduced

## CINNAMINSON GROUNDWATER CONTAMINATION SITE
## OU2 – PREFERRED REMEDY

- No action is EPA preferred remedy as no additional capping is required
- Prior installation of NJDEP-approved cap has mitigated risk pathway of landfill waste acting as a contaminant source to groundwater
- Capping reduces infiltration of precipitation into landfills & provides safe management of remaining landfill waste via cap & LFG management system
- Documentation of cap construction/maintenance/ groundwater monitoring have verified effectiveness of cap

# CINNAMINSON GROUNDWATER CONTAMINATION SITE -OU2

For more site related information:

Cinnaminson Public Library
1609 Riverton Road
Cinnaminson Township, NJ
08077

www.epa.gov/region2/superfund/npl/cinnaminson

# CINNAMINSON GROUNDWATER CONTAMINATION SITE
# OU2 – NEXT STEPS

Please submit written comments by **May 29th** to:

Katz.Ira-Perry@epa.gov

or by regular mail:

Perry Katz, RPM
U.S. EPA
290 Broadway, 19th Floor
New York, NY 10007

Public comment period runs from April 30th thru May 29th

## CINNAMINSON GROUNDWATER CONTAMINATION SITE - OU2

# Questions?